

Abstract of the Disclosure

Common Rail Fuel Injector

A common rail fuel injector comprises a three-way control valve that controls the flow of high-pressure fuel to a fuel cavity for fuel injection. Specifically, when the control valve is transitioning to a first, on position, from a second, off position, high-pressure fuel is provided to both the fuel cavity and to a check control cavity, thereby preventing fuel injection until the control valve seats in the first, on position. Once seated in the first, on position, the control valve only provides high-pressure fuel to the fuel cavity allowing fuel injection to occur. To stop injection, the control valve is moved from the first, on position to the second, closed position. Once again, while the control valve is in the transition location between the two positions, high-pressure fuel is provided to both the fuel cavity and to the check control cavity thereby terminating injection. Once the control valve is seated back in the second, closed position, the fuel cavity and the check control cavity are fluidly connected.